

Software Defined Multiband EVA Radio, Phase I

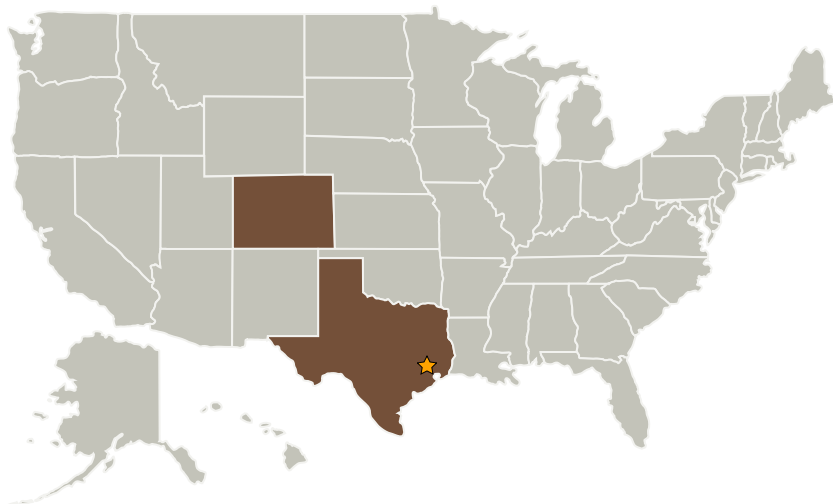
Completed Technology Project (2008 - 2008)



Project Introduction

The objective of this research is to propose a reliable, lightweight, programmable, multi-band, multi-mode, miniaturized frequency-agile EVA software defined radio (SDR) that supports data telemetry, voice, and high-rate video. The proposed radios would be a part of an advanced, incrementally expandable ad hoc wireless network. For improved reliability and to assure stand-alone functionality, the network would support a real-time 3D location function using mobile-assisted navigation and utilizing TOA/TDOA methods. To achieve unparalleled power consumption efficiency, Lexycom proposes the use of energy-aware packet routing and cognitive selection of operating point of the transceivers. Along with the scheduling, we plan to use an innovative RF packetization technique aimed to virtually obsolete negotiations between the network nodes prior to change in transmitted signal parameter on a packet-by-packet basis. We anticipate that after completion of the Phase I, Lexycom will be more than capable of delivering an operational prototype EVA SDR for further evaluation and enhancements of the chosen concepts and approaches. Since Lexycom Technologies is the manufacturer of an FCC certified, reconfigurable, small form factor and low power consumption SDRs, we are in an ideal position to transfer and expand our knowledge base from our existing radio platform over to the EVA radio.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Lexycom Technologies, Inc.	Supporting Organization	Industry	Longmont, Colorado

Primary U.S. Work Locations

Colorado	Texas
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Aleksy Pozhidaev

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.2 Extravehicular Activity Systems
 - └ TX06.2.3 Informatics and Decision Support Systems